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Antimicrobials: Epidemiology of MDR-Gram-negatives

Clinical case of an Ambler class D OXA-48-type beta-lactamase in a *Klebsiella pneumoniae* strain in a Dutch hospital in 2007

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The class D β-lactamase OXA-48 gene was firstly identified in a *Klebsiella pneumoniae* isolate in Turkey in 2004. Since then, several other OXA-48-producing isolates of various Enterobacteriaceae have been reported all over the world.
This case report describes what is believed to be the first carbapenem-resistant OXA-48 producing *K. pneumoniae* and *Escherichia coli* in the Netherlands.

In August 2006, a 63-year-old woman from Turkish origin, was seen in the emergency room of our hospital with abdominal pain, absence of defecation and weight loss of 8 kg in 2 months. She reported having been admitted in a Turkish hospital recently for a short duration (<24 hours) during her holiday. She was diagnosed as having a large B-cell lymphoma of the stomach, for which chemotherapy was started. Multiple admissions had occurred since then and abdominal pain in the right upper quadrant was reported frequently. December 12th 2006, an abscess in the wall of the stomach was diagnosed. In January the patient developed an second abscess in the liver and a drain was placed. Fluid from her liver drain grew *K. pneumoniae*, with a MIC for meropenem of 1mg/L and for imipenem of 8mg/L. Four months later, rectal swabs also revealed an ESBL positive *E. coli* with a MIC for meropenem of 8mg/L and for imipenem of 8mg/L. At that time, the isolates were not recognised as OXA-48 producers because detection guidelines for carbapenemases were lacking.

The isolates were included in a historical collection, used for validation purposes, and by coincidence, in 2013, the Check-MDR CT103 microarray (Check-Points) revealed the presence of $bla_{\text{OXA-48}}$ in both *E. coli* and *K. pneumoniae*. This case would have been recognised as a possible carbapenemase producer using the current Dutch National guideline for the detection of resistant micro-organisms; the MIC screening breakpoint for meropenem has been set at > 0.25 mg/L for all Enterobacteriaceae, and for Imipenem at > 1 mg/L for *E. coli*, *Klebsiella spp*., *Salmonella spp*., *Enterobacter spp*. and *Citrobacter spp*.

The first report of an OXA-48 producer, in The Netherlands, dated to 2010. This case report shows that OXA-48 carbapenemase can easily be missed and that it probably was present in the Netherlands earlier than currently known.
The relation between our patient and her visit to Turkey is likely. This case illustrates the importance of good guidelines for the detection of carbapenem resistance, also at low MICs.